

AMENDMENTS TO THE CLAIMS

Pursuant to 37 CFR §121(c), the claim listing, including the text of the claims, will serve to replace all prior versions of the claims in the application.

Please amend claims 1-5, 7, 8 and 10 as follows:

Listing of Claims:

1 1. (Currently Amended) A distributed router, comprising:
2 a plurality of line connection units;
3 a main processor disposed to construct and manage a routing table, to receive changes of
4 routing information from adjacent routers, update the routing table, and to broadcast changes of
5 routing information received through internal InterProcessor Communication paths within the
6 distributed router;
7 a switching unit coupled to switch transmission of packets between the line connection
8 units and the main processor;
9 a plurality of forwarding tables positioned in different corresponding ones of the plurality
10 of line connection units, to copy, store and manage parts of the routing table; and
11 a plurality of forwarding processors positioned in different corresponding ones of the
12 plurality of line connection units, to receive the changes of routing information broadcast by the
13 main processor through the internal ~~InterProcessorCommunication~~ InterProcessor Communication
14 paths of the distributed router, to update different corresponding ones of the forwarding tables, to

ascertain an output ~~port conforming to said transmission~~ direction of a packet received from an external router by looking-up forwarding information in corresponding ones of the forwarding tables for ~~packets~~ the packet received from ~~the external routers~~ router, and transmitting the ~~packets~~ packet to the output ~~[[ports]]~~ direction ascertained, to determine whether an output ~~[[port]]~~ direction of a packet received from the switching unit is ~~connected to~~ toward ~~[[the]]~~ an external router or ~~[[to]]~~ toward the switching unit by looking-up the forwarding information in the corresponding forwarding table for the packet, to transmit the packet to the external router when the ~~output port determined output direction of the packet~~ is ~~connected to~~ toward the external router, and to discard the packet when the ~~output port determined output direction of transmission~~ of the packet is ~~connected to~~ toward the switching unit.

2. (Currently Amended) The distributed router of claim 1, wherein the main processor comprises:

a plurality of input/output interfaces handling packets transmitted and received to and from the switching unit;

a switch interface buffering packets transmitted and received via the input/output interfaces, and interfacing with the switching unit; and

a routing table lookup and management unit receiving packets from the input/output interfaces through the switch interface, and transmitting packets received to the input/output interfaces in conformance with routing information stored in the routing table, and receiving the changes of routing information from external routers, updating the routing information with the

changes of routing information, and transmitting updated routing information to the forwarding processors through the internal ~~Interprocessor~~ InterProcessor Communication paths of the distributed router.

3. (Currently Amended) The distributed router of claim 1, wherein each of the forwarding processors comprises:

an Internet Protocol packet receiving unit for extracting an IP header field from each incoming packet;

an IP header analyzing unit extracting an IP address required for lookup control from each IP header received from the Internet Protocol packet receiving unit;

a lookup table storing address indices for the forwarding tables where information on each packet is stored;

a lookup control unit latching the address of the forwarding table intended for reference from the lookup table using the IP address extracted by the IP header analyzing unit, reading forwarding information from the forwarding table, and when a packet is received from the switching unit and an output direction of the packet is toward an external router, making any one a determination of packet transmission to transmit the packet to the external router when an output port of the packet input from the switching unit is a port directed to an external router and of packet discard, and when a packet is received from the switching unit and the output [[port]] direction of the packet is toward the switching unit, making an determination to discard the packet;

an IP header changing unit changing information of the IP header of each packet based on the forwarding information obtained by the lookup control unit; and

an IP packet transmitting unit transmitting the stored packets according to the changes in information for the header of each packet to the external router.

4. (Currently Amended) A distributed router, comprising:

a plurality of line connection units;

a plurality of main processors positioned in corresponding different ones of the plurality of line connection units, to construct and manage a routing table, receive changes in routing information from adjacent routers, update the routing table, and broadcast changes of routing information through IPC paths of the distributed router;

a switching unit switching packets received from the line connection units to corresponding ones of the line connection units to which these packets are transmitted;

a plurality of forwarding tables positioned in corresponding different ones of the plurality of line connection units, to copy, store and manage parts of the routing table; and

a plurality of forwarding processors positioned in corresponding different ones of the plurality of line connection units, to ascertain an output [[port]] direction of a packet received from an external router by making a lookup in a corresponding one of the forwarding table for a packet received from an external router tables and transmit the packet received to the output [[port]] direction ascertained, to determine whether an output [[port]] direction of a packet [[input]] received from the switching unit is ~~connected to~~ toward ~~[[the]]~~ an external router or the

switching unit by making a search of forwarding information stored in the ~~forwarding table~~
corresponding one of the forwarding tables for the packet, transmit the packet to the external
router when the output [[port]] direction is ~~connected to~~ toward the external router, and discard
the packet when the output [[port]] direction is ~~connected to~~ toward the switching unit, and update
the forward table in response to reception of changes in routing information broadcast by the main
processor through the internal IPC paths of the distributed router.

5. (Currently Amended) A ping-pong preventing method using a distributed router,
comprising:

a step 1 in the distributed router having a switch unit connecting a main processor and a
plurality of line connection units, of the main processor updating a routing table, and transmitting
changes of routing information to respective line connection units through internal paths of the
distributed router, when the main processor receives changes of routing information from an
adjacent router;

a step 2 of a forwarding processor positioned in each of the line connection units updating
a forwarding table in response to reception of the changes of routing information broadcast from
the main processor through the internal paths of the distributed router; and

a step 3 of the forwarding processor receiving a packet from one of an external router and
the switching unit, ascertaining input and output [[ports]] directions of the packet, transmitting
the packet received from an external router to the switching unit, discarding the packet received
from the switching unit when the ~~input and output ports are connected to~~ direction of the packet

15 is toward the switching unit, and transmitting the packet received from the switching unit when
16 ~~the input and output ports are not connected to~~ direction of the packet is not toward the switching
17 unit.

1 6. (Original) The method of claim 5, wherein step 1 of updating the routing table,
2 comprises:

3 a step 1-1 with the main processor updating the routing table when the main processor
4 receives the changes of routing information;

5 a step 1-2 with the main processor adjusting changes in a routing path to fit the forwarding
6 table of each of the line connection units; and

7 a step 1-3 with the main processor transmitting the changes of the routing information to
8 the respective line connection units through the internal paths of the distributed router.

1 7. (Currently Amended) The method of claim 5, wherein step 3 of the forwarding
2 processor ascertaining input and output ports, comprises:

3 a step 3-1 with the forwarding processor ascertaining the output port of the packet received
4 from an external router by searching the forwarding table ~~for the packet~~ and transmitting the
5 packet according to the output port ascertained;

6 a step 3-2 with the forwarding processor ascertaining the output ~~[[port]]~~ direction of the
7 packet received from the switching unit by searching the forwarding table ~~for the output port of~~
8 ~~the packet received from the switching unit~~, and transmitting the packet when the output ~~[[port]]~~

9 direction is toward an external router; and

10 a step 3-3 with the forwarding processor ascertaining the output [[port]] direction of the
11 packet received from the switching unit by searching the forwarding table ~~for the output port of~~
12 ~~the packet received from the switching unit~~, and discarding the packet when the output [[port]]
13 direction is toward the switching unit.

1 8. (Currently Amended) The method of claim 5, wherein the forwarding processor
2 receiving a packet from one of an external router and the switching unit, and ascertaining input
3 and output [[ports]] directions of the packet in step 3 comprises:

4 a step of the forwarding processor extracting an IP header from an incoming IP packet;

5 a step of the forwarding processor extracting an IP address for lookup control from the IP
6 header; and

7 a step of the forwarding processor ascertaining the output [[port]] direction by using the
8 IP address to make a search of forwarding table using the IP address.

1 9. (Original) A router with a distributed architecture, comprised of:

2 a main processor updating routing information stored in a routing table and broadcasting
3 changes in said routing information;

4 a plurality of line connection units;

5 a switching unit directing transmission of packets between said main processor and said
6 line connection units;

each of said line connection units comprising:

a forwarding table storing a copy of parts of said routing table, and

a forwarding processor making a discontinuance of transmission of any packet received by a corresponding one of said line connection units from said switching unit and designated by a destination address to be subsequently forwarded to said switching unit.

10. (Currently Amended) The router of claim 9, with said forwarding processor comprised of:

when the packet has been received from said switching unit and said destination address of the packet indicates that an output [[port]] direction of the packet is toward ~~of said~~ ~~corresponding one of said line connection units coupled to~~ an external router, transmitting the packet to the external router, and

when the packet has been received from said switching unit and said destination address of the packet indicates that an output [[port]] direction of the packet is toward ~~of said~~ ~~corresponding one of said line connection units coupled to~~ said switching unit, making said discontinuance.